

REMARKS

Claims 1-23 are pending, subject to the cancellation of claim 4 and the addition of claim 24.

The amendments cancel claim 4; amend claims 1, 3, 5, 7, 9, 10, 13, 19, and 21-23; and add claim 24. Support for the amendments is in the as-filed claims.

New claim 24 incorporates elements of original claims 1 and 4. Amended claim 1 incorporates some of the elements of original claim 3.

The Examiner states that Applicants have not complied with one or more conditions for receiving the benefit of the filing date of the earlier filed U.S. Application No. 09/793,250 under 35 U.S.C. 120 on the grounds that a specific reference to U.S. Application No. 09/793,250 in compliance with 37 C.F.R. 1.78(a) is not included in the first sentence of the specification following the title or in the application data sheet. Applicants respectfully traverse the Examiner's statement, because a specific reference to U.S. Application No. 09/793,250 is included in both the first sentence of the as-filed specification following the title and in the application data sheet. Applicants provide copies of page 1 of the as-filed specification and page 3 of the application data sheet. Both references in the as-filed specification and the application data sheet identify U.S. Application No. 09/793,250 by application number (consisting of the series code and serial number) and filing date. Both references state the relationship between the subject application and the earlier filed application. Applicants also provide a photocopy of the Response Postcard which lists the Application Data Sheet as being included with the application when filed. Applicants believe these references meet the requirements of both 35 U.S.C. 120 and 37 C.F.R. 1.78(a) for a specific reference to the earlier filed application. Applicants note that U.S. Application No. 09/793,250 is now abandoned, and therefore Applicants amend the first page of the specification to state that.

The drawings are objected to under 37 C.F.R. 1.83(a) for not showing every feature of the invention specified in the claims on the ground that features a) and d) of claim 1 are not shown in the drawings. Applicants respectfully traverse this objection since because both Figures 1 and 2 illustrate features a) and d) of claim 1 in the form of a graphical drawing symbol as required by 37 C.F.R. 1.83(a). To illustrate these features more clearly, Figures 1 and 2 have been amended to add item nos. 239, 251, and 253. Replacement and annotated sheets are attached. Each of item nos. 251 and 253 illustrates feature a) of claim 1 and item no. 239 illustrates feature d) of claim 1. Two

paragraphs of the specification have been amended to be consistent with amended Figures 1 and 2. These amendments enter no new matter.

Claims 1-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Specifically, claims 9, 10, and 19 are rejected on the ground that the claimed "characterized" is not a recitation of positive structural element of an apparatus. In response, Applicants amend each of claims 9, 10, and 19 to replace the clause "further characterized in that" with the word "wherein". Also, claims 22 and 23 are rejected because the recitations of a first device, controller, etc. provide for ambiguities without the recitation of a second or third device, controller, etc. In response, Applicants amend each of claims 22 and 23 to delete the recitations of "first" where there is no recitation of a "second" or a "third". For a similar reason, Applicants amend instances of "first outlet" to "outlet" in claims 1, 13, and 21-23.

Claims 1-3 and 5-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' Disclosure of Admitted Prior Art (ADAA) as illustrated e.g., by the article by M. I. Abdul Mutalib et al. in Trans. IChemE, vol. 76, Part A, March 1998, starting at page 319 ("Mutalib") in view of any one of U.S. Patent No. 4,384,145 ("Jensen"), 4,617,092 ("Hiramatsu"), and 4,024,027 ("Boyd"). This rejection should be withdrawn because it would not have been obvious for a person of ordinary skill in the art to modify Mutalib in view of any one of Jensen, Hiramatsu, or Boyd and thereby arrive at an apparatus recited in claim 1 having, among other things, not only a condenser in communication with an upper vapor-liquid contacting area, an inlet port to introduce liquid from the condenser to the upper vapor-liquid contacting area, and an inlet port in communication with a feed section, but also a temperature measuring device vertically spaced above an outlet port, another temperature measuring device vertically spaced below the outlet port, and an additional inlet port in communication with the upper vapor-liquid contacting area.

Applicants' invention relates to a control apparatus for controlling a dividing wall distillation column used to perform the separation of two feed streams into three product streams. Page 1, lines 10-12; page 9, lines 12-26. The dividing wall distillation column has two inlet ports, one for introducing one feed stream to an upper vapor-liquid contacting area of the dividing wall distillation column, and an additional inlet port for introducing another feed stream to a middle vapor-liquid contacting area of the dividing wall distillation column. Page 29, lines 3-8; page 34,

lines 3-13. All pending claims have been amended to recite the additional inlet port. The apparatus comprises a condenser, such as a contact condenser. Page 34, line 14 to page 35, line 27. The apparatus comprises two temperature measuring devices, one vertically spaced above the outlet port and the other vertically spaced below the outlet port. Page 44, lines 16-21; page 48, lines 6-11; page 48, line 29 to page 49, line 4; page 49, line 26 to page 50, line 5.

Mutalib, Jensen, Hiramatsu, and Boyd, alone or in combination, do not teach or suggest an apparatus comprising a dividing wall distillation column in which there is a condenser in communication with an upper vapor-liquid contacting area, an inlet port to introduce liquid from the condenser to the upper vapor-liquid contacting area, and an inlet port in communication with the feed section, a temperature measuring device vertically spaced above the outlet port, another temperature measuring device vertically spaced below the outlet port, and an additional inlet port in communication with the upper vapor-liquid contacting area. A person of ordinary skill in the art, having read any of the cited references, alone or in combination, would not be motivated to modify any of them to arrive at Applicants' invention since none of the cited references, alone or in combination, teach or suggest an apparatus for controlling the separation of two feed streams. All of the cited references deal with separating only a single feed stream. In addition, none of Jensen, Hiramatsu, and Boyd, alone or in combination, teaches or suggests an apparatus containing at least one vertically oriented partition, and teaches or suggests the orientation or location of reflux, measurements, or withdrawn streams including sidedraws with respect to either side or either end of a vertically oriented partition. Furthermore, Hiramatsu does not teach or suggest adjusting reflux rate based on temperature and neither Boyd nor Hiramatsu teaches or suggests a sidedraw. Applicants' examples show unexpectedly that the claimed apparatus can control tray temperature, reflux rate, and side draw rate, despite two feed streams each with fluctuating compositions.

By canceling claim 4 and adding claim 24, the total number of claims has not changed but the number of independent claims has increased from by one, from four to five. A fee transmittal form authorizing payment for the additional independent claim through deposit account is attached.

In view of the foregoing amendments and remarks, the subject application is now believed to be in a condition for an allowance of claims 1-3 and 5-24 and such action is respectfully requested.

Respectfully submitted,

UOP LLC

A handwritten signature in black ink, appearing to read "Michael A. Moore".

Michael A. Moore
Attorney for Applicant
Reg. No. 41,203

MAM:sb

Attachments:

- Copy of page 1 of application
- Copy of page 3 of application data sheet
- Copy of return postcard
- Figure 1: Replacement and annotated sheets
- Figure 2: Replacement and annotated sheets

EXPRESS MAIL CERTIFICATE			
I hereby certify this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated below and is addressed to the Mail Stop Patent Applications, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450			
"Express Mail" label number	ER 004674643 US	Date of Deposit	August 27, 2003
Typed or printed name of person mailing paper or fee		Michael A. Moore	
Signature of person mailing paper or fee		<i>Michael A. Moore</i>	

101 650 570



DIVIDING WALL DISTILLATION COLUMN CONTROL APPARATUS

CROSS-REFERENCE TO RELATED APPLICATION

This application is a Continuation of U.S. Application No. 09/793,250, filed on
5 February 26, 2001, which is incorporated herein by reference in its entirety.

FIELD OF THE INVENTION

This invention relates to the general field of process control as applied to distillation columns used in the petroleum, chemical, and petrochemical industries.

10 This invention relates more specifically to a control apparatus and a control system for controlling a dividing wall distillation column used to perform the separation of two feed streams into three product streams. This invention is applicable to a process for producing alkylated aromatic compounds with removal of aromatic byproducts.

BACKGROUND OF THE INVENTION

15 Nearly forty years ago, it became apparent that household laundry detergents made of branched alkylbenzene sulfonates were gradually polluting rivers and lakes. Solution of the problem led to the manufacture of detergents made of linear alkylbenzene sulfonates (LABS), which were found to biodegrade more rapidly than the branched variety. Today, detergents made of LABS are manufactured worldwide.

APPLICATION DATA SHEET

Representative Information

Representative Customer Number:: 23490

Continuity Information

This application is a::	Continuation
> Application One::	09/793,250
Filing Date::	02/26/2001

27-Aug-2003

The "Mail Room" Stamp of the Patent and Trademark Office imprinted here
acknowledges receipt and filing of the following:

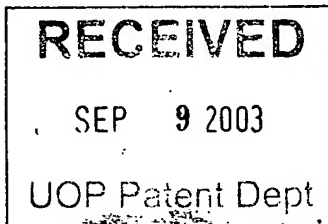
DOCUMENT: PATENT APPLICATION: ATTORNEY DOCKET NUMBER 108352

ENCLOSURES: UTILITY PATENT APPLICATION TRANSMITTAL, FEE TRANSMITTAL
FOR FY 2003, CREDIT CARD FORM PTO-2038, APPLICATION DATA
SHEET, NONPUBLICATION REQUEST UNDER 35 USC 122(b)(2)(B)(i), 67
PAGES SPECIFICATION, 8 PAGES CLAIMS, ABSTRACT,
INFORMATION DISCLOSURE STATEMENT and 3 SHEETS OF FORMAL
DRAWINGS

APPLICANT: JAMES W. HARRIS ET AL.

TITLE: DIVIDING WALL DISTILLATION COLUMN CONTROL APPARATUS

REFERENCE NO.: 108352 - MAM



1/3

Fig. 1

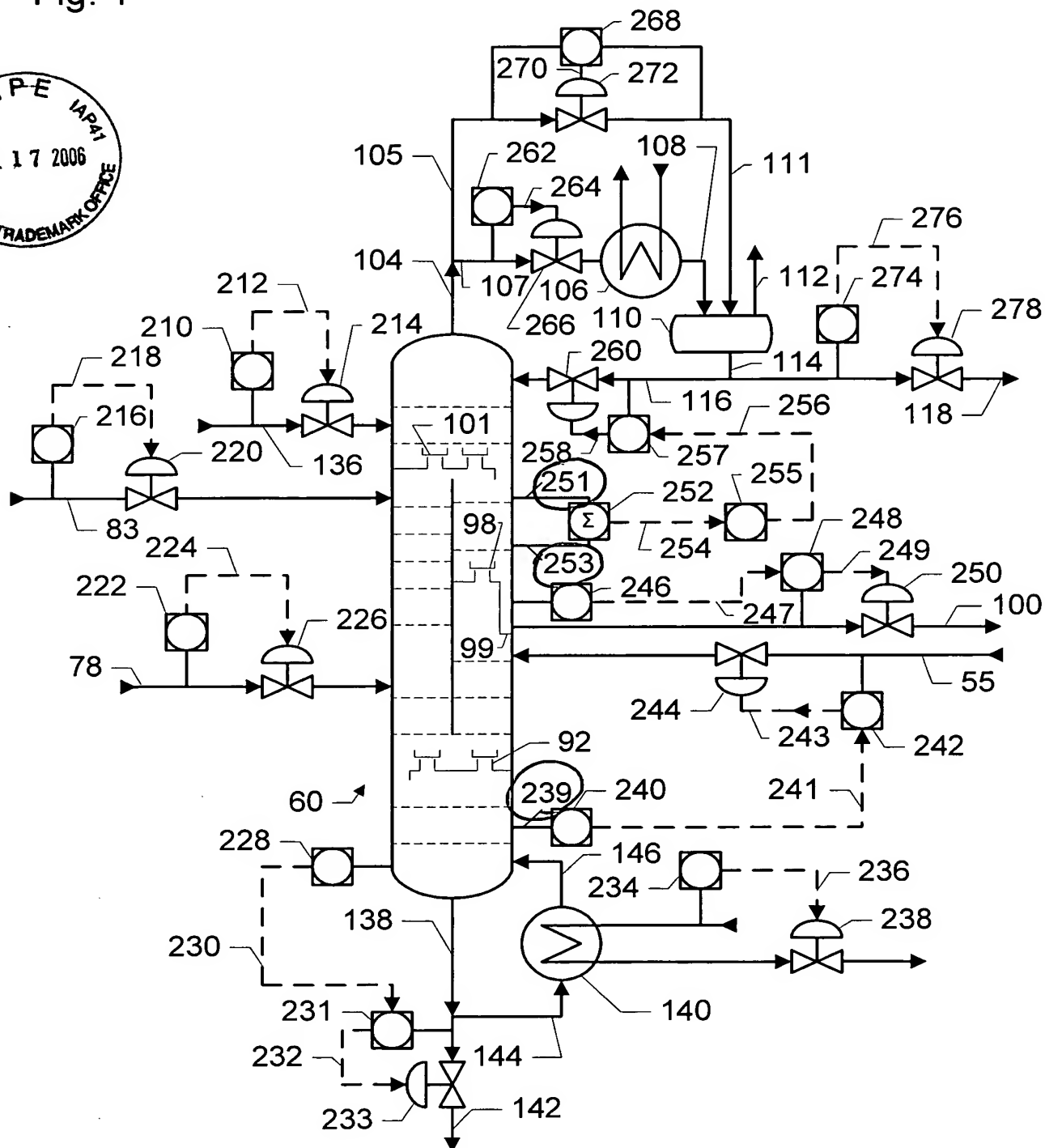


Fig. 2

